

CLAIMS

1. Redispersible powder obtainable by (co)polymerization, using a polymer with
5 cationic functionality in an aqueous medium, optionally accompanied by the use of
conventional additives, the polymer with cationic functionality being obtained by
(co)polymerization in an aqueous medium of olefinically unsaturated (co)monomers,
wherein at least one (co)monomer has a cationic functionality, further (co)monomers are
added and polymerization takes place in the presence of suitable initiators, and by drying
10 the aqueous dispersion obtained, the (co)polymerizate having one or more reactive groups.
2. Redispersible powder according to claim 1, characterized in that the polymer with
cationic functionality is formed in situ in the presence of a seed.
- 15 3. Redispersible powder according to claim 1 or 2, characterized in that the polymers
and/or (co)monomers are so selected and the process so controlled, that a (co)polymerizate
particle with heterogeneous morphology is formed.
4. Redispersible powder according to claim 3, characterized in that a core-shell
20 morphology, particularly a raspberry-like structure is formed.
5. Redispersible powder according to claim 4, characterized in that the (co)polymerizate
particle has a core-shell morphology, where there is a substantially hydrophilic, inner phase
and a substantially hydrophobic, outer phase.
- 25 6. Redispersible powder according to at least one of the preceding claims, characterized
in that the reactive group or groups are present in the polymer with cationic functionality
and/or in the (co)monomers and represent a hydroxyl, carboxyl, carboxyl ester, amino,
ammonium, amide, silane, epoxide, carbonyl, formamide, acetamide, succinimide and/or
30 epihalohydrin group.

7. Redispersible powder according to at least one of the preceding claims, characterized in that the reactive (co)monomers represent about 2 to 100 and in particular about 10 to 100 wt.% of the polymer with cationic functionality or in situ polymer.
- 5 8. Redispersible powder according to at least one of the preceding claims, characterized in that, in the (co)polymerizate obtained, for about 1 part by weight of monomer with cationic functionality of the polymer (with cationic functionality) there are about 2 to 250, particularly about 4 to 100 parts by weight of (co)monomer.
- 10 9. Redispersible powder according to at least one of the claims 2 to 8, characterized in that, for forming the seed, use is made of about 0.1 to 25 and in particular about 0.5 to 20 wt.% of the (co)monomer, based on the finished (co)polymerizate.
- 15 10. Redispersible powder according to at least one of the preceding claims, characterized in that the (co)polymeric seed or latex particles have an average diameter of about 30 to 1000 nm, particularly about 50 to 600 nm and are substantially monodisperse.
- 20 11. Redispersible powder according to at least one of the preceding claims, characterized in that the polymer with cationic functionality or the in situ polymer is a homopolymer or a (co)polymer and represents about 0.5 to 50, particularly about 1 to 30 wt.% of the total monomer weight.
- 25 12. Redispersible powder according to at least one of the preceding claims, characterized in that the cationic functionality is due to a quaternary ammonium group.
13. Redispersible powder according to at least one of the preceding claims, characterized in that through a suitable pH-value change groups present in the aqueous medium are reactivated.
- 30 14. Redispersible powder according to claim 13, characterized in that the pH-value change is brought about either by the addition of a corresponding solid or by a corresponding component in the matrix, to which the redispersible powder is added.

15. Redispersible power according to at least one of the preceding claims, characterized in that the (co)monomers additionally incorporate at least one protonated, reactive group, which is deprotonated on suitably raising the pH-value.
- 5 16. Redispersible powder according to at least one of the preceding claims, characterized in that the (co)monomers additionally have at least one anionic functionality.
- 10 17. Redispersible powder according to at least one of the preceding claims, characterized in that the preparation of the dispersion takes place with little or no emulsifier.
18. Redispersible powder according to claim 17, characterized in that the proportion of emulsifier is below about 5 and in particular below about 2.5 wt.%.
- 15 19. Redispersible powder according to at least one of the preceding claims, characterized in that the drying of the dispersion prepared takes place in conventional manner, particularly by spray or freeze drying.
- 20 20. Redispersible powder according to at least one of the preceding claims, characterized in that the (co)polymerizate contains about 0.001 to 50 mole %, particularly about 0.1 to 35 mole % monomer units with cationic functionality.
- 25 21. Redispersible powder according to at least one of the preceding claims, characterized in that the powder comprises a mixture of powder 1 of one kind of latex particles and a further powder 2 of other latex particles.
- 30 22. Redispersible powder according to claim 21, characterized in that the weight ratio of powder 1 to powder 2 is in the range of about 5:95 to 95:5, preferably 10:90 to 90:10, particularly about 20:80 to 80:20.
23. Redispersible powder according to one of claims 21 or 22, characterized in that powder 2 is a powder of homopolymers or copolymers, selected from the monomers vinyl

acetate, ethylene, vinyl versatate, acrylate, methacrylate, styrene and/or butadiene, which build up the polymers.

24. Aqueous dispersion of the redispersible powder according to one of the claims 1 to 23.

25. Dispersion according to claim 24, characterized in that the dispersion comprises a mixture of an aqueous dispersion 1 with one kind of latex particles and a further aqueous dispersion 2 with other latex particles.

26. Dispersion according to claim 25, characterized in that the weight ratio of dispersion 1 to dispersion 2 is in the range of about 5:95 to 95:5, preferably about 10:90 to 90:10, particularly about 20:80 to 80:20.

27. Dispersion according to one of claims 25 to 26, characterized in that dispersion 2 is an aqueous dispersion of homopolymers or copolymers, selected from the monomers vinyl acetate, ethylene, vinyl versatate, acrylate, methacrylate, styrene and/or butadiene, which build up the polymers.

28. Process for the preparation of a redispersible powder according to at least one of the claims 1 to 23, comprising (co)polymerization using a polymer with cationic functionality in an aqueous medium, optionally accompanied by the use of conventional additives, the polymer with cationic functionality being obtained by (co)polymerization in an aqueous medium of olefinically unsaturated (co)monomers, wherein at least one (co)monomer has a cationic functionality, further (co)monomers are added and polymerization takes place in the presence of suitable initiators, and by drying the aqueous dispersion obtained, in which the (co)polymerizate has one or more reactive groups.

29. Process according to claim 28, characterized in that the polymer with cationic functionality is formed in situ in the presence of a seed.

30. Process according to claim 28 or 29, characterized in that the polymers and/or (co)monomers are so selected and the process so controlled that a (co)polymerizate particle with heterogeneous morphology is formed.
- 5 31. Process according to claim 30, characterized in that a core-shell morphology, particularly a raspberry-like structure is formed.
32. Process according to claim 31, wherein the (co)polymer particle has a substantially hydrophilic, inner phase and a substantially hydrophobic, outer phase.
- 10 33. Use of the redispersible powder according to at least one of the claims 1 to 23 in composite and coating mortars, cement dyes and adhesives, in plastics-containing, cement-bound systems, particularly in mortars, and plastics-bound, cement-free binders, particularly in cement-free mortars, gypsum mortars, primers, plasters, carpet, wood, powder and floor adhesives, as well as in wallpaper pastes, disperse powdered dyes, glass fibre composite systems and as filling material for columns in chromatographic separation processes, particularly in gas chromatography and high pressure liquid chromatography (HPLC) and as calibration material for particle size measuring instruments.
- 15 34. Use of the redispersible powder according to at least one of the claims 1 to 23 as a carrier for the delayed release of active substances of all types, particularly in the agricultural sector for fungicides, herbicides, phytohormones, insecticides, nematocides, rodenticides and acaricides, in the food sector for vitamins, mineral substances, etc. and in the pharmaceutical sector for the delayed release of medicaments.
- 20 35. Use of the aqueous dispersion according to one of claims 24 to 27 in composite and coating mortars, cement dyes and adhesives, in plastics-containing, cementbound systems, particularly in mortars, and plastics-bound, cement-free binders, particularly in cement-free mortars, gypsum mortars, primers, plasters, carpet, wood, powder and floor adhesives, as well as in wallpaper pastes, disperse powdered dyes and glass fibre composite systems.
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